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ABSTRACT

With the introduction of photography and photomechanical printing processes in the 19th century, the first age of machine pictures and reproductions emerged. The 20th century introduced computer image processing systems, creating a digital imaging revolution. Rather than concentrating on the adversarial aspects of the computer's influence on photography, the electronic revolution can be viewed as offering alternatives that were not previously available. The discussion of photography and electronic imaging addresses the following issues: repercussions for current media; deconstruction and alteration of images; transformation and the erasure of the distinction between the actual and represented world; differentiation between computer-processed images and photographs, and the possibility of hybridization between traditional and technological technologies; the challenge that the further diminishment of differentiation between unique originals and multiples means for the traditional control of replication, distribution, and concepts of value; and velocity of image capture and increased availability to the public. Digital imaging offers potential for new constructs, will permanently transform visual arts and extend our notion of art, and necessitates new ways of perceiving, knowing, and judging art. The digital revolution offers empowerment and opportunity, as well as new problems such as ethics and copyright. (MAS)

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Photography/Digital Imaging: Parallel & Paradoxical Histories

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Background

The history of photographic technologies may begin with the earliest human efforts to create accurate records of images in their environment. Numerous devices were employed over centuries of experimentation. The historical and theoretical underpinnings included linear / mathematical systems formulated to reconstruct the visual world optically. The camera obscura traces its roots at least to the eleventh century, and the camera lucida with lens and mirror was refined by the eighteenth century. This provided a basis for the search to capture and fix the camera's image during the eighteenth and nineteenth centuries. With the introduction of photography and photomechanical printing processes in the nineteenth century, the first age of machine pictures and reproductions emerged. The twentieth century advanced computer image processing systems, creating a digital imaging revolution. These rapidly developing technologies continue to blur distinctions between actual and represented reality, and alter both the technical and philosophical points of view regarding image making.

Repercussion

Photography at its genesis, and then digital imaging, both introduced radical new tools and provided significant transformation in the visual arts. They offered innovative artistic possibilities which in turn generated questions, concern, even backlash to 'machine-aided' art. Questions typically arise concerning the validity of art done via machine. Lovejoy (1992) notes that "The discovery of photography essentially questioned the functions of art. The theology of "pure" art, which grew once photography (as reproduction, as stills, as photomontage, as cinema) supplanted some of the social-use value of art, contained within its ideology such concepts as the divine genius of the painter and the sanctity of hand skills as the *only* means of making art."(p. 16).

The rapid proliferation of photography in the mid-to-late nineteenth century was accompanied by considerable repercussion. The painter Paul Delaroche is traditionally acknowledged as having pronounced 'From this day painting is dead'. The commentary that 'New arts destroy the old' is often attributed to Emerson. Baudelaire is also said to have offered his observation that 'Industry, by invading the territories of art, has become art's most mortal enemy'.

Photography and industry were not fatal to painting and art, but the visual arts were *immutably affected*. Just as photography proved to be a means of expression, creation, innovation, and communication, digital imaging now offers new modes of visualization, organization and production. Traditional photography will continue, but the influence of electronic technologies will be abiding. Quandaries persist as the nature of art and the artistic process is scrutinized in relation to computer technology. Rather than consider the cynical or adversarial aspects of the computer's influence on photography, it's more important to note the benefits gained. The electronic revolution offers alternatives that were previously not available.

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Deconstruction & Alteration

Almost as soon as mathematical perspective was refined to 'reconstruct' the visual world, some artists set out to 'deconstruct' visual representation. For example, anamorphic distortion garbled, extruded, and hid an image, then used an optical system such as a mirrored cylinder to reclaim the view.

Soon after the introduction of photography, artists combined images, added color, recorded movement and made hand alterations. Image juxtaposition, the superimposition of multiple images, mutation, and the study of movement have many antecedents in the history of art. Cubism, Futurism and Surrealism all liberated viewers by placing the 'real' world in conjecture. Combined data sets and synthesized images have translated codes in different forms throughout the history of the visual arts.

Lovejoy (1992) noted the parallel paradigms of photography being to Modernism, as electronic media is to Postmodernism. (p. 16). As new tools were developed to reconstruct 'reality', some artists responded by generating ways to deconstruct that imagery. This opened the door for the phenomenon of the postmodern, and disintegrated barriers of traditional concepts of art. The confirmation of both photography and electronic imaging as influences and tools in the visual arts emerged.

Transformation

Photography has been the medium most associated with realism. William J. Mitchell (1992) observed that "After more than a century and a half of photographic production, we also have to contend with the powerful 'reality effect' that the photographic image has by now constructed for itself." (p. 26). Twentieth century visual technologies have further erased the distinction between the actual and the represented world. The role of representing the three-dimensional world has expanded with electronic tools. The development of three dimensional imaging technologies, virtual reality, and real time imaging further blurs distinctions and alters visualizations. Mitchell also noted that we may "...see the emergence of digital imaging as a welcome opportunity to expose the aporias in photography's construction of the visual world, to deconstruct the very idea of photographic objectivity and closure, and to resist what has become an increasingly sclerotic pictorial tradition." (p. 8). Images manipulated by the computer further subvert the 'realism' associated with photography and invite new quests in visualization.

Digital imaging encompasses a diverse array of techniques and applications, from the computer as an electronic replacement for traditional media, to the exploration of digital tools for their unique capabilities and their new ways of influencing perception and thought. Electronic imaging offers us the ability to generate and manipulate more images, by more means than ever before. We currently deal with the quandary of an era when artists celebrate the potential of digital image manipulation, and the press would prefer a code of ethics to regulate manipulation. High resolution graphics with recomposing and retouching capabilities raise the question of what is 'real'. Is photography any longer evidence of anything?

Thus digital imaging with its new conventions, forms, manipulations, and transformations, has jolted photography's 'reality reference'. While basically aware of the differences between objects and their photographic representations, traditional assumptions about the 'reality' of photographic images, combined with the manipulations possible with digital images, create a dilemma. A parallel is that both traditional photography and digital imaging re-present our visual world. Veracity of representation is a growing concern, with virtual reality an example of current directions to further confound the eye.

Photography 'compressed' the

three-dimensional world to a two-dimensional surface, with the visual world as the model. Now electronic imaging 'decompresses' or releases images to 3-D, 4-D, 5-D with dimensions and sensations beyond reality ... that have not previously existed and could take on new meanings.

Each new technology applied to art forms offers potential for new aesthetic constructs, both visual and conceptual. The current generation of digital / electronic imaging is marked by repercussion, transformation, mutation, proliferation and velocity.

Differentiation

The distinction between digital and analog representation is significant. Digitally encoded and computer processed images are clearly distinguished from that of their photographic predecessor. Critical factors are differing amounts of information, and differing characteristics of replication and manipulation in each format. Digital information is easy to manipulate, recombine, and transform ... it is infinitely malleable.

The amount of complexity can be exceptional in computer generated images, and the risks also enormous. So many versions can be created so rapidly, that the alternatives and speed are extraordinary. Multiple sequences of creation are common, and it is curious that few artists exhibit sequential works.

Many regard computer use as relinquishing 'high touch', yet the human factor is critically important. The machine plus the human mind is far more synergistic than machine alone. The tool alone is never the artist. The tool in teamwork with the artist serves the artistic process explicitly. The human/machine interaction is richly expressed in the creation of sophisticated hardware, software, applications and products. Human talent remains the most important resource. The gap between artist and technology is narrowing as artists meld intuitively the real with fabrication. This further obscures the distinction between the actual environment and the altered environment.

New technologies enable artists to look at things in new ways, push technique beyond the traditionally possible, and to go beyond mere fascination with the tools to personal, individual statements. We may then reach a level beyond works that merely display technique. A toolsmith alone is just an operator of the machine. The true collaboration of artist, hardware and software designers produces a win/win situation. A creation greater than the sum of the parts can result. Collaboration allows for multiple credits, varied perceptions, new questions and problems to solve. Significant opportunity exists for both interdisciplinary and intermedia alliance which may well influence the process, product and context of the new technology.

Hybridization is a common bond between traditional and new technologies. Many works begin with traditional photography or art media, and add computer manipulation to produce new combinations. Metaphors arise quickly. We now hear of the 'electronic darkroom', and software that offers dodging, burning, drawers, brushes, crayons, paper surfaces, sketchbooks, and all the traditional tools. A metamorphosis may result that produces works that never could have existed outside the computer. This may eventually necessitate a new vocabulary.

Replication

Much as photography influenced painting, digital imaging has further diminished the customary differentiation between unique originals and multiples. This challenges traditional control of replication, distribution, and concepts of 'value', and differs fundamentally from conventional, established rules of the art market. The issues of public versus private art, authorship, copyright and permanence will present perplexing questions for the market and any collectors bound to the old rules.

One response to the concerns is to recognize the significance of the artist's concept above the tool, material or process. The originality of the visual statement does not depend on the rarity of the image, the laborious handwork required, intricacy of process, or tradition of the tool. The objective of a print or 'hard copy' is traditional, yet digital media may not necessarily follow that model. Prints can be made, yet publication and dissemination can remain in the electronic mode. The forms can be uniquely interactive, collaborative, or network-based ... and not dependent on traditional hard copy meant for wall exhibition.

"Digital imagers give meaning and value to computational ready-mades by appropriation,transformation, reprocessing, and recombination; we have entered the age of electrobricollage." (Mitchell, 1992, p. 7). Artists approach new forms with diversity, spontaneity, a sense of discovery, exploitation of the technology, and elements of play. Opportunity is rich for artist/machine interaction and free exploration. New tools afford potential for new combinations of art and technology, and a fresh repertory of forms, methods, communications, and interpretations. Many artists attempt to demolish the confines which are intrinsic to the computer and explore the plastic and expressive potentials of digital imaging. Every tool offers particular limits as well as potentials to be considered. The immediacy of digital production is a factor which appeals to many artists.

Velocity

Nineteenth century draftsmen and painters saw photography as a very quick way to record the visual world. Currently, the speed of capture, manipulation, print production and transmission of electronic images reflects the increased velocity of twentieth century life. In both instances, the images became available to many more people. Before photography, only the wealthy could have their portrait painted. As the 19th century progressed, itinerant photographers offered portraits to ordinary people in diverse places. Now electronic images are transmitted instantaneously and globally. Both photography and electronic imaging offered a democratizing influence.

Conclusion

The near wizardry of digital technology is reminiscent of the magical quality attributed to photography in its early years. Some parallels have been briefly examined in this discussion. The paradoxes also present themselves for consideration. Each new technology brings with it a set of potentials and limitations. Each necessitates learning the technical aspects in order to freely explore the expressive and conceptual ideas. Each also has a countenance, an idiom, as well as a capacity for unique realizations.

The debates will likely escalate as digital imaging becomes a global representation, just as photography did in its first 160 years. Image form, meaning, use, and value will essentially change. Digital imaging offers potential for new constructs, both visual and conceptual ... and will permanently transform visual arts and extend our notion of art. Electronic imaging will necessitate new ways of perceiving, knowing and judging art. The digital revolution offers empowerment and opportunity, as well as new problems such as ethics and copyright.

The Survey

The **slide survey** constitutes the 'eye' of this IVLA presentation, and exemplifies some of these new visual paradigms. The images speak eloquently. The slides present a visual panopticon of selected historic and contemporary artists. The sample provides a rich repertory of diverse artists exhibiting new images and forms. Some artists demolish the limits inherent to their medium. Each medium and tool offers particular restrictions as well as capabilities for the artist. These visual selections represent a variety of concept and expression.

Artists differ greatly in what they *bring* to the computer. Some generate their visual forms on the computer alone, while others digitize their photographs and other visual material for a hybridized approach. Still others use the computer as an intermediary tool. One example is the use of digital tools to produce images for the construction of a final collage or composition. The artist then fabricates one-of-a-kind works with computer generated images. An interesting paradox exists in this use of tools engineered for reproduction to create unique works.

Many of these artists have had considerable influence in the use of computers as a tool/medium in the visual arts.

There continues to develop a syntax of digital imaging, resulting in new pictorial forms and altered views of our world.

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